

FISHES OF GADANA RIVER IN KALAKKAD MUNDANTHURAI TIGER RESERVE¹

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Key words: Kalakkad Mundanthurai Tiger Reserve, fish diversity, Western Ghats

Streams in Gadana river basin located in the buffer zone of Kalakkad Mundanthurai Tiger Reserve were surveyed during January 1997-98. Thirty-one species belonging to 5 orders, 12 families and 22 genera were recorded, of which *Hypselobarbus dobsoni*, *Pseudambassis ranga*, *Puntius sarana orphoides* and *Glyptothorax madraspatnum* were first records for this river basin.

INTRODUCTION

Documentation and conservation are the current areas of concern for fish biologists. Gadana river and its tributaries which flow in the buffer zone of Kalakkad Mundanthurai Tiger Reserve form a sub-basin of a major river called Tamiraparani in the southeastern Western Ghats. Tamiraparani river basin constitutes the Gadana river, Ramanadhi, Pachayar, Chittar, Manimuthar and Jambunadhi. However, the river systems of Tamiraparani sub-basins were completely unexplored. Silas (1953) described a new species of *Puntius arulius tambiraparniei* from Tamiraparani river. Johnsingh and Wickram (1987) reported the freshwater fishes from Kalakkad Mundanthurai Wildlife Sanctuary. Rema Devi *et al.* (1997) gave a list of fishes from Tamiraparani river system. To date there is no record of fishes from the sub-basins of Tamiraparani river. The present survey is part of a programme on the fish diversity in Western Ghats streams.

STUDY AREA

Gadana river, with its tributaries, forms a sub-basin in the Tamiraparani river basin. This river originates (8° 48' N lat., 77° 19' E long.) from Alwarkurichi and Kadayam ranges of Western Ghats at an altitude of 1,564 m above

msl and flows down the eastern slopes of Western Ghats. During flooding, this river confluences with the Tamiraparani river. The perennial Gadana river is drained by three tributaries, viz. Pampar, Kallar and Iluppaiyar. Pampar and Kallar are dammed and Iluppaiyar stream joins the Gadana river below the reservoir. Below the confluence of Iluppaiyar, the river traverses through plains, draining many villages adjacent to the river for about 12 km south-eastwards, before joining Tamiraparani river near Thirupputtai Marudur village in Ambasamudram taluk. The length of Gadana river from its origin to the confluence is about 33 km.

MATERIAL AND METHODS

Fishes were collected from several localities in the three tributaries using drag net, various mesh sizes of gill nets and scoop nets. The colour, spots if any, and other characters of the fishes caught were noted and the specimens were preserved in 10% formalin.

Systematic Account

Among the 31 species recorded from Gadana river, a systematic account of 23 species is given below; detailed accounts on 8 species (*Hypselobarbus dobsoni*, *Puntius arulius tambiraparniei*, *Anguilla bengalensis*, *Puntius sarana orphoides*, *Ompok bimaculatus*, *Bhavana australis*, *Nemacheilus triangularis* and *Glyptothorax madraspatnum* have been published earlier (CAMP workshop 1997; Arunachalam and Sankaranarayanan in press).

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1. *Labeo calbasu* (Hamilton-Buchanan)
1822, *Cyprinus calbasu* Ham.-Buch.
Fishes of Ganges: 297, 387 pl. 2, fig. 33 (type locality: rivers and ponds of Bengal and in the Western provinces)

Material: 2 examples; 98 mm to 124 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Pakistan, Nepal, Myanmar, Thailand and Yunnan (South China).

Status: Not common in Gadana river.

Remarks: It attains a standard length of 90 cm (Talwar and Jhingran 1991). In our collections, we recorded a maximum standard length of 124 mm.

2. *Puntius amphibius* (Valenciennes)
Capoeta amphibia Valenciennes, 1842, Hist. nat. Poiss., 16: 182, pl. 478 (type locality: Bombay).

Material: 3 examples; 32 mm to 84 mm from one locality (Pampar) were examined.

Distribution: Pampar. First record. Elsewhere: Orissa, Madhya Pradesh, Rajasthan and Sri Lanka.

Status: Not common in Gadana river.

Remarks: It attains a standard length of 200 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 84 mm.

3. *Puntius bimaculatus* (Bleeker)
Gnathopogon bimaculatus Bleeker, 1844, Verh. Nat. Holl. Maatsch. Haarlem, (2) 20: 17, pl. 4, fig. 1 (type locality: Ceylon)

Material: 4 examples; 36 mm to 48 mm from two localities (Pampar and Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Bangalore.

Status: Common in Gadana river.

Remarks: It attains a standard length of 100 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 48 mm.

4. *Puntius dorsalis* (Jerdon)
1849, *Systemus dorsalis* Jerdon, Madras

J. Lit & Sci 15: 314 (type locality: tanks and rivers in the neighbourhood of Chennai).

Material: 3 examples; 48 mm to 98 mm from three localities were examined.

Distribution: Gadana river. First record. Elsewhere: Cauvery and Krishna river systems and Sri Lanka.

Status: Common in Gadana river.

Remarks: It attains a standard length of 24 cm (Talwar and Jhingran 1991). We recorded a maximum standard length of 98 mm.

5. *Puntius filamentosus* (Valenciennes)
1844, *Leuciscus filamentosus* Valenciennes Hist. nat. Poiss, 17: 96 pl. 492 (type locality: Alleppey, Kerala State)

Material: 3 examples; 42 mm to 58 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Goa, Karnataka and Tamil Nadu, Sri Lanka and Thailand.

Status: Not common in Gadana river.

Remarks: Attains a total length of 180 mm (Jayaram, 1991). In our collections we recorded a maximum total length of 58 mm.

6. *Puntius sarana sarana* (Hamilton-Buchanan)
1822, *Cyprinus sarana* Ham.-Buch. Fishes of Ganges: 307, 388 (type locality: ponds and rivers of Bengal).

Material: 4 examples; 72 mm to 111 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Afghanistan, Pakistan, throughout India except peninsula south of Krishna river. Nepal, Bangladesh and Myanmar.

Status: Common in Gadana river.

Remarks: It attains a standard length of 31 cm (Talwar and Jhingran 1991). In our collections we recorded a maximum size of 111 mm in standard length.

7. *Puntius sarana subnasutus* (Valenciennes)
1842, *Barbus subnasutus* Val. Hist. nat. Poiss., 16:16:154 (type locality: Pondicherry)

Material: 5 examples; 74 mm to 111 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Krishna and Cauvery river systems and Kerala in Peninsular India.

Status: Common in Gadana river.

Remarks: It attains a standard length of 250 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 111 mm.

8. *Puntius ticto* (Hamilton-Buchanan)

1822, *Cyprinus-ticto* Ham.-Buch. Fishes of Ganges. 314, 398 pl. 8, fig. 87 (type locality: Southeastern parts of Bengal)

Material: 6 examples; 48 mm to 52 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Pakistan, lower Swat river drainage; India, Nepal, Sri Lanka, Bangladesh, Myanmar and Thailand.

Status: Not common in Gadana river.

Remarks: It attains a standard length of 100 mm (Talwar and Jhingran 1991). In our collections we recorded a maximum standard length of 52 mm.

9. *Puntius vittatus* Day

1865, *Puntius vittatus* Day Proc. Zool. Soc. Lond: 303 (type locality: Cochin, Kerala)

Material: 10 examples; 23 mm to 26 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Goa, Karnataka, Kerala, Tamil Nadu, Kutch, Bihar, Rajasthan and Sri Lanka.

Status: Common in Gadana river.

Remarks: It attains a total length of 25 mm (Jayaram 1991). We recorded a maximum total length of 26 mm.

10. *Salmostoma clupeioides* (Bloch)

1782, *Cyprinus clupeioides* Bloch, Naturges ausland Fische 12:49 pl. 408, fig. 2 (type locality: "Indian ocean" evidently not the Ocean but a freshwater body).

Material: 5 examples; 62 mm to 84 mm

from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Eastern and Western Ghats, Maharashtra, Madhya Pradesh, Gujarat and Myanmar.

Status: Not common in Gadana river.

Remarks: *Salmostoma clupeioides* is not common in Gadana river. It attains a standard length of 15 cm (Talwar and Jhingran 1991). We recorded a maximum standard length of 84 mm.

11. *Amblypharyngodon microlepis* (Bleeker)

1853, *Leuciscus microlepis* Bleeker Verh. Batav Genoot. Kunst. Wet., 25:141 (type locality: Bengal).

Material: 5 examples; 51 mm to 76 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Uttar Pradesh, Bihar, West Bengal, Orissa, Andhra Pradesh, Tamil Nadu and Kerala.

Status: Not common in Gadana river.

Remarks: It attains a standard length of 100 mm (Talwar and Jhingran 1991). But in our collections we recorded a maximum standard length of 76 mm.

12. *Danio aequipinnatus* (McClelland)

1839, *Perilampus aequipinnatus* McClelland, Asiat. Res. 19(2): 393 pl. 60, fig. 1 (type locality: Assam)

Material: 10 examples; 48 mm to 84 mm from three localities were examined.

Distribution: Gadana river. First record. Elsewhere: India, Sri Lanka, Bangladesh, Myanmar and Thailand.

Status: Common in Gadana river. Inhabits hill streams up to 300 m above msl.

Remarks: It attains a standard length of 150 mm (Talwar and Jhingran 1991). But we only recorded a maximum standard length of 84 mm.

13. *Esonus themacois* (Valenciennes)

1842, *Nuria thermocois* Val. Hist. nat. Poiss. 16: 238 pl. 472 (type locality: hot spring at Kanniya, Sri Lanka).

Material: 3 examples; 42 mm to 83 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Sri Lanka.

Status: Not common in Gadana river.

Remarks: It attains a standard length of 120 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 83 mm.

14. *Parluciosoma daniconius*
(Hamilton-Buchanan)

1822, *Cyprinus daniconius* Ham.-Buch. Fishes of Ganges: 327, 391 pl. 15, fig. 89 (type locality: rivers of Southern Bengal)

Material: 10 examples; 42 mm to 103 mm from Pampar and Thoniyar were examined.

Distribution: Pakistan, India, Sri Lanka, Bangladesh, Myanmar and Thailand, Mekong river basin.

Status: Common in Gadana river, prefers running water.

Remarks: It attains a standard length of 100 mm (Talwar and Jhingran 1991). We recorded a maximum standard length of 103 mm.

15. *Garra mullya* (Sykes)

1841, *Chondrostoma mullya*, Trans. Zool. Soc. Lond. 2: 359, pl 62, fig. 3 (type locality: Bheema river at Daunde, near Pune).

Material: 10 examples; 42 mm to 122 mm from three localities were examined.

Distribution: Gadana river. First record. Elsewhere: India except Assam and the Himalaya.

Status: Common in Gadana river.

Remarks: It grows upto 170 mm in standard length (Talwar and Jhingran 1991). We recorded a maximum standard length of 122 mm.

16. *Lepidocephalus thermalis*
(Valenciennes)

1846, *Cobitis thermalis* Val. Hist. nat. Poiss., 18: 78 (type locality: Malabar)

Material: 2 examples; 35 mm to 42 mm from two localities (Pampar and Thoniyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Kerala, Karnataka, Maharashtra and Sri Lanka.

Status: Common in Gadana river.

Remarks: *Lepidocephalus thermalis* attains a standard length of 80 mm (Talwar and Jhingran 1991). We recorded a standard length of 42 mm.

17. *Mystus armatus* (Day)

1865, *Hypselobagrus armatus* Day, Proc. Zool. Soc. Lond: 289 (type locality: Cochin)

Material: 3 examples; 42 mm to 68 mm from two localities (Pampar and Thoniyar) were examined.

Distribution: Gadana river: First record. Elsewhere: Wynaad hills, Western Ghats and Nagaland; probably also lower Myanmar.

Status: Common in Gadana river.

Remarks: *Mystus armatus* attains a standard length of 145 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 68 mm only.

18. *Aplochelys lineatus* (Valenciennes)

1846, *Panchax lineatum* Val. Hist. nat. Poiss., 18: 381 (type-locality: Peninsula, India)

Material: 9 examples; 33 mm to 60 mm from two localities (Pampar and Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Western and Southeastern regions.

Status: Common in Gadana river.

Remarks: It attains a length of 100 mm (Day 1878). But we recorded a maximum standard length of 60 mm only.

19. *Pseudambassis ranga*
(Hamilton-Buchanan)

1822, *Chanda ranga* Ham.-Buch. Fishes of Ganges 113, 371 pl. 16, fig 38 (type locality: freshwaters of all Gangetic provinces).

Material: 3 examples; 32 mm to 38 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Pakistan, India, Bangladesh, Myanmar, Thailand and Malaysia.

Status: Not common in Gadana river

Remarks: It attains a standard length of 70 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 38 mm.

20. *Etroplus maculatus* (Bloch)

Chaetodon maculatus Bloch, 1785, Syst. Ichth. Pl. 427, fig. 2 (type locality: India)

Material: 5 examples; 30 mm to 44 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: India: Orissa, Andhra Pradesh, Tamil Nadu, Kerala and Sri Lanka.

Status: Not common in Gadana river.

Remarks: It attains a standard length of 80 mm (Talwar and Jhingran 1991). But in our collections we recorded a maximum standard length of 44 mm.

21. *Oreochromis mossambica* (Peters)

1852, *Chromis (Tilapia) mossambicus* Peters, Montab, Akad, Wiss., Berlin: 681 (type locality: Mozambique)

Material: 6 examples; 42 mm to 240 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: East Africa; introduced in India, Pakistan and Sri Lanka.

Status: Common in Gadana river.

Remarks: In our collections we recorded a maximum standard length of 240 mm.

22. *Macropodus cupanus* (Valenciennes)

1831, *Polyacanthus cupanus*, Hist. nat. Poiss., 7: 357 (type locality: Ariancoupon river at Pondicherry)

Material: 2 examples; 28 mm to 32 mm from one locality (Iluppaiyar) were examined.

Distribution: Gadana river. First record. Elsewhere: Eastern India, Sri Lanka, Western Myanmar, Malay peninsula and Sumatra.

Status: Not common in Gadana river.

Remarks: It attains a standard length of 75 mm (Talwar and Jhingran 1991). But we recorded a maximum standard length of 32 mm.

23. *Mastacembelus armatus* (Lacepede)

1800, *Macrognathus armatus* Lacepede, Hist. nat. Poiss, 2: 286 (type-locality: not known)

Material: 2 examples; 140 mm to 510 mm from three localities were examined.

Distribution: Gadana river. First record. Elsewhere: Pakistan, India, Sri Lanka, Nepal, Myanmar through Thailand and Malaya to Southern China.

Status: Common in Gadana river.

Remarks: It attains a standard length of 61 mm (Talwar & Jhingran 1991). In our collections we recorded a maximum size of 510 mm.

RESULTS AND DISCUSSION

From our study, it is evident that Gadana river drainage system is rich in fish diversity. A total of 32 species belonging to 21 genera were recorded from each locality of the three tributaries (Table 1). Of all these three localities, Pampar and Iluppaiyar are less disturbed. The banks of the Iluppaiyar stream are unstable due to farming activities. Even though Iluppaiyar stream is disturbed beyond the riparian zone, the fish species richness is high compared to the other two streams. This may be due to the presence of rich riparian strips.

Puntius sarana orphoides, *Pseudambassis ranga*, *Glyptothorax madraspatnum* are comparatively rare and *Hypselobarbus dobsoni* occurs in great abundance in Gadana river, but they are not recorded in other river systems constituting the Tamiraparani river basin.

Puntius sarana orphoides was originally described by Valenciennes from Java. Menon (1963) recorded this subspecies from Manipur. This species was first reported from Western Ghats of South India. Menon (1992) recorded *Hypselobarbus dobsoni* from the Krishna river

FISHES OF GADANA RIVER

TABLE I
FISH SPECIES RECORDED IN GADANA RIVER

Species	Pampar	Kallar	Iluppaiyar	Species	Pampar	Kallar	Iluppaiyar
I Order: Anguilliformes				iv) Family: <i>Cobitidae</i>			
i) Family: Anguillidae				Genus: <i>Lepidocephalus</i>			
Genus: <i>Anguilla</i>				22. <i>Lepidocephalus thermalis</i>	1	1	2
1. <i>Anguilla bengalensis</i>	1	1	1	III) Order: Siluriformes			
<i>bengalensis</i>				v) Family: Bagridae			
II Order: Cypriniformes				Genus: <i>Mystus</i>			
ii) Family: Cyprinidae				23. <i>Mystus armatus</i>	1	2	2
Genus: <i>Hypselobarbus</i>				vi) Family: Siluridae			
2. <i>Hypselobarbus dobsoni</i> *	4	4	4	Genus: <i>Ompok</i>			
Genus: <i>Labeo</i>				24. <i>Ompok bimaculatus</i>	-	-	2
3. <i>Labeo calbasu</i>	-	-	2	vii) Family: Sisoridae			
Genus: <i>Puntius</i>				Genus: <i>Glyptothorax</i>			
4. <i>Puntius amphibius</i>	1	-	2	25. <i>Glyptothorax</i>			
5. <i>Puntius bimaculatus</i>	2	3	4	<i>madraspatnum</i> *	1	-	2
6. <i>Puntius dorsalis</i>	2	2	2	IV) Order: Cyprinodontiformes			
7. <i>Puntius arulius</i>				viii) Family: Aplocheilidae			
<i>tambiraparniei</i>	2	2	4	Genus: <i>Aplocheilus</i>			
8. <i>Puntius filamentosus</i>	-	-	3	26. <i>Aplocheilus lineatus</i>	2	5	6
9. <i>Puntius sarana orphoides</i> **	-	-	4	V) Order: Perciformes			
10. <i>Puntius sarana sarana</i>	2	1	3	ix) Family: Ambassidae			
11. <i>Puntius sarana</i>				Genus: <i>Pseudambassis</i>			
<i>subnasutus</i>	2	5	6	27. <i>Pseudambassis ranga</i> *	-	-	3
12. <i>Puntius ticto</i>	-	-	10	x) Family: Cichilidae			
13. <i>Puntius vittatus</i>	3	2	10	Genus: <i>Eetroplus</i>			
Genus: <i>Salmostoma</i>				28. <i>Eetroplus maculatus</i>	-	-	5
14. <i>Salmostoma clupeoides</i>	-	-	5	Genus: <i>Oreochromis</i>			
Genus: <i>Amblypharyngodon</i>				29. <i>Oreochromis mossambica</i>	2	2	6
15. <i>Amblypharyngodon</i>				xi) Family: Belontiidae			
<i>microlepis</i>	-	-	5	Genus: <i>Macropodus</i>			
Genus: <i>Danio</i>				30. <i>Macropodus cupanus</i>	-	-	2
16. <i>Danio aequipinnatus</i>	3	3	4	xii) Family: Mastacembelidae			
Genus: <i>Esomus</i>				Genus: <i>Mastacembelus</i>			
17. <i>Esomus thermoicos</i>	-	-	3	31. <i>Mastacembelus armatus</i>	1	1	1
Genus: <i>Parluciosoma</i>							
18. <i>Parluciosoma daniconius</i>	6	4	2				
Genus: <i>Garra</i>							
19. <i>Garra mullya</i>	4	3	3				
iii) Family: Balitoridae							
Genus: <i>Bhavana</i>							
20. <i>Bhavana australis</i>	2	-	-				
Genus: <i>Nemacheilus</i>							
21. <i>Nemacheilus triangularis</i>	2	2	5				

* First record for Tamirabarani river basin.

** First record for Western Ghats.

drainage. It extends its range to Tamil Nadu part of Western Ghats as a dense population. *Glyptothorax madraspatnum* has so far been reported from Aralam Wildlife Sanctuary, Kerala by Shaji *et al.* (1995). The present survey reports

it for the first time in Tamiraparani river basin. *Pseudambassis ranga* was originally described in the Gangetic Provinces by Hamilton-Buchanan (1822). Later Ajithkumar and Vijayan (1988) recorded this species from Keoladeo National Park,

Bharatpur, Rajasthan. We are reporting it from Gadana river for the first time.

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